METROPOLITAN AUTO RADIO

SERVICE MANUAL

PYE MODEL PE-86CR

GENERAL INFORMATION

TYPE - Specifically designed for installation in Metropolitan cars.

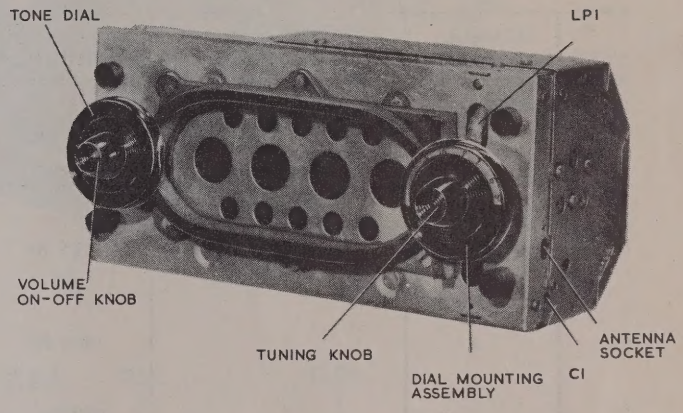
TUNING RANGE - 540 to 1600 Kc

IF - 455 Kc

TUBE COMPLEMENT - 12BE6 - Converter
12BA6 - IF Amplifier
12AV6 - Detector-AVC-AF Amp
6AS5 - Power Amplifier
6X4 - Rectifier

POWER INPUT - 2.65 amps at 14V DC

POWER OUTPUT - 2 watts (maximum)



OPERATING INSTRUCTIONS

VOLUME CONTROL & ON-OFF SWITCH. The volume control and on-off switch are combined and are operated with the inner left-hand knob. Turn radio on by turning knob to the right until a "click" is heard. Continued rotation to the right will increase volume. To turn radio off, turn knob fully to left until "click" is heard.

TONE CONTROL. The outer left-hand knob operates the tone control. Full clockwise rotation will result in maximum treble response.

TUNING. Tune stations with the right-hand knob. Always tune carefully until you are exactly on the station; tuning to either side of it will result in poor tone quality.

SERVICE NOTES

TO REPLACE TUBES. To replace tubes, it will be necessary to remove radio from car. Proceed as follows:

1. Disconnect "A" lead from car terminal located behind instrument panel.
2. Remove antenna plug from antenna receptacle located on right side of radio.
3. Pull off control knobs and pointer.
4. Remove two nuts, two washers and dial scale assembly.
5. Remove radio from behind instrument panel.
6. Remove back cover from radio to expose tubes.

RADIO NOISE SUPPRESSION. A capacitor installed on the car generator and a suppressor in the car's ignition system distributor circuit, eliminates noise from these sources.

TO REPLACE VIBRATOR OR FUSE. The plug-in type vibrator and radio fuse are accessible from the rear of the instrument panel. Should these require replacement, it is only necessary to pull out the old vibrator or fuse and plug in a new one.

This Metropolitan car radio is not manufactured by Motorola, Inc. However, through agreement with Nash Motors Division, Motorola, Inc. will service this Metropolitan car radio, both in and out of warranty, through its authorized service stations under the same procedure of standard warranty established on our present Nash radios.

Part No. 68P531326 Price 10 Cents Printed in U.S.A.

ALIGNMENT

EQUIPMENT REQUIRED

1. A small screwdriver for IF and RF alignment.
2. An accurately calibrated 400 cycle, AM signal generator.
3. A low range output meter.
4. A special dummy antenna for RF alignment. Construct dummy antenna as shown in Figure 1.

PROCEDURE

1. Remove back cover.

2. Connect an output meter across the voice coil (secondary of output transformer T-3).

3. Connect a 12 volt storage battery to chassis and battery terminal of receiver; turn receiver on and allow it to warm up for a few minutes. Set volume control at maximum.

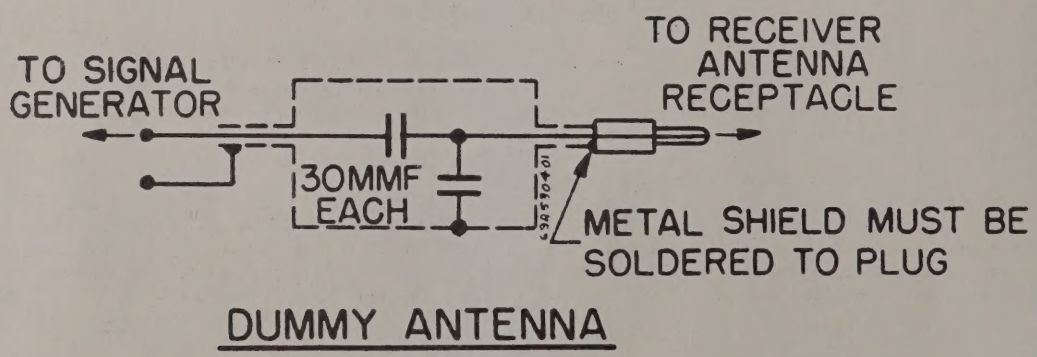
4. For greater accuracy, keep output of receiver at approximately 1/2 watt (1/2 watt = 1.25 volts on output meter) throughout alignment by reducing generator output (not receiver volume control) as stages are brought into alignment.

ALIGNMENT CHART

STEP	DUMMY ANTENNA	GENERATOR CONNECTION	GENERATOR FREQUENCY	GANG SET TO	ADJUST See Fig. 2	REMARKS
IF ALIGNMENT						
1.	.1 mf	Hi side -12BE6 grid (pin #7) Lo side - chassis	455 Kc	Gang open	T-1, T-2 cores	Peak for maximum in order indicated. Check by repeating procedure.
RF ALIGNMENT						
2.	Special- see Figure 1.	Ant receptacle thru special dummy	1605 Kc	Gang open	C-6	Peak for maximum.
3.	"	"	1400 Kc	Tune in signal	C-1	Peak for maximum.
4.	"	"	600 Kc	"	L-2 core	Peak antenna coil core for maximum while rocking gang.

5. Repeat steps 3 & 4 until maximum output is obtained. The last adjustment should be trimmer C-1.

6. With set installed in car, peak antenna trimmer (C-1) for maximum noise or volume of a weak station at approximately 1400 Kc. Car antenna should be fully extended.



DUMMY ANTENNA

FIGURE 1. DUMMY ANTENNA

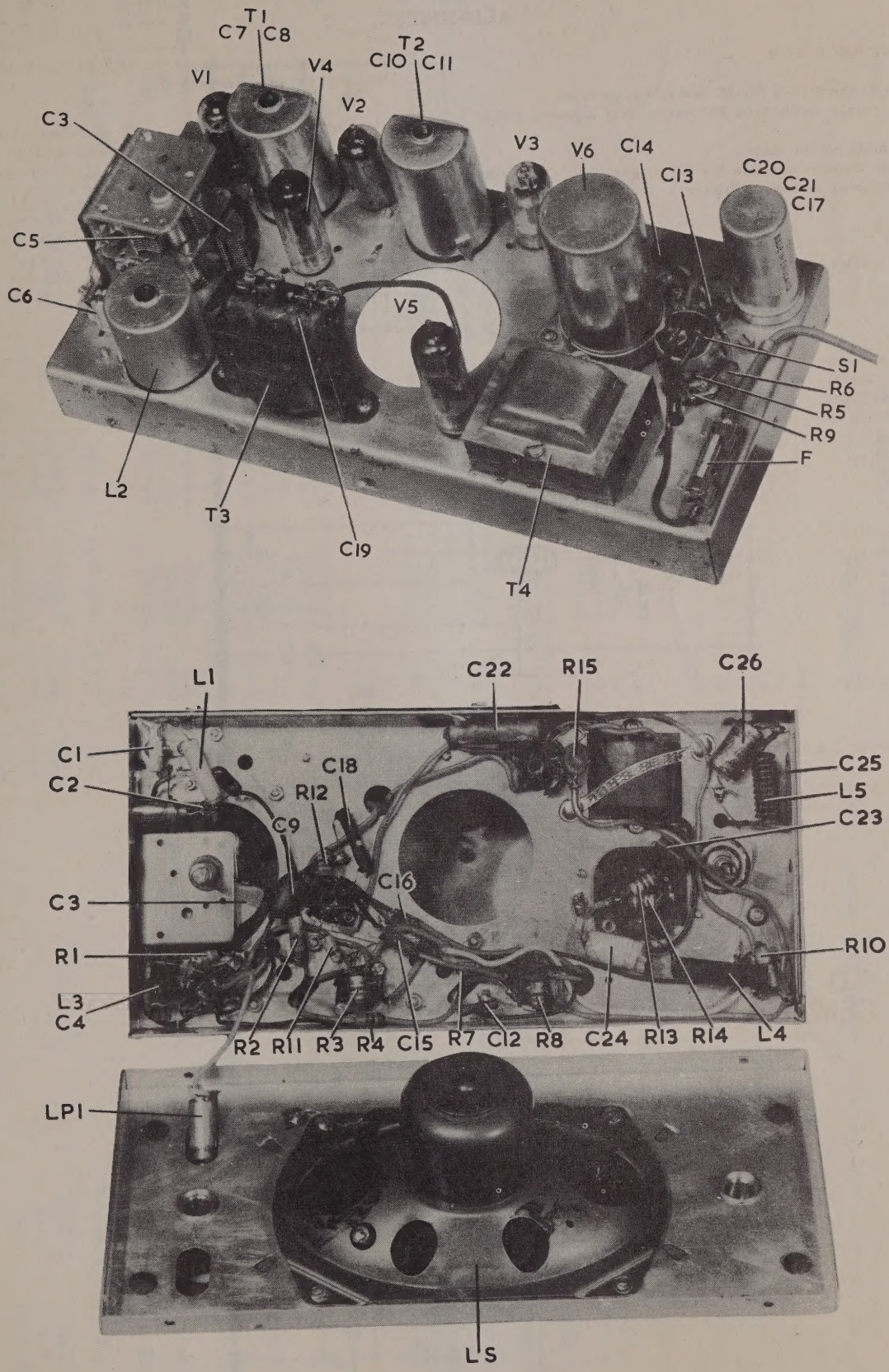


FIGURE 2. PARTS LOCATIONS

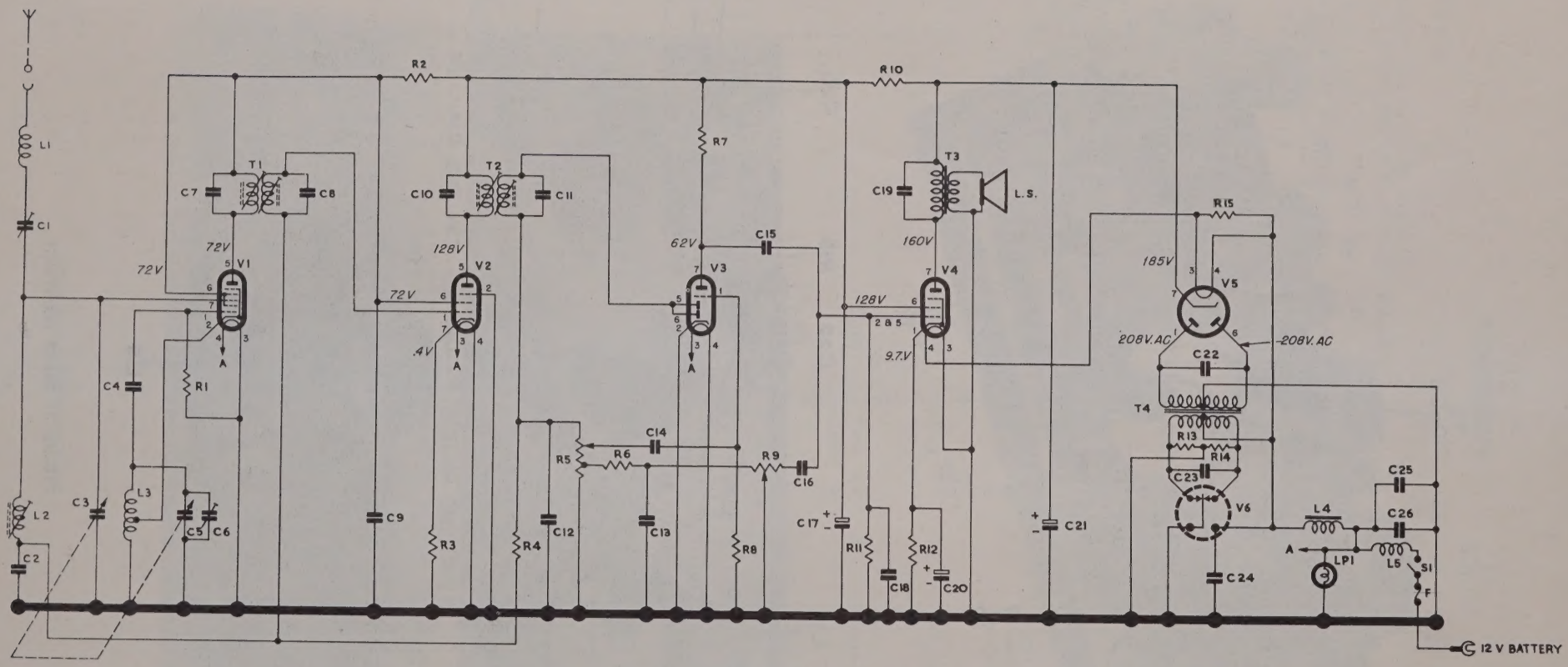


FIGURE 3. SCHEMATIC DIAGRAM

REPLACEMENT PARTS LIST

NOTE: When ordering parts, specify model number of set in addition to part number and description of part.

Ref. No.	Motorola Part Number	PYE Part Number	Description	List Price
CHASSIS PARTS - ELECTRICAL				
Capacitors				
C-1	20K481527	800170	Mica, variable: 70 mmf nom; with brkt	.45
C-2	8R13514	669106	Paper: .05 mf 100V	.25
C-3,5	19B501790	800198	Variable, 2 gang	3.00
C-4	-	-	Part of L-3	
C-6	20K511186	800169	Mica, variable: 20 mmf nom; with brkt	.40
C-7	-	-	Mica: 100 mmf (Part of T-1)	
C-8	-	-	Mica: 100 mmf (Part of T-1)	
C-9	8R23146	668807	Paper: .05 mf 200V	.20
C-10	-	-	Mica: 100 mmf (Part of T-2)	
C-11	-	-	Mica: 100 mmf (Part of T-2)	
C-12	21R115639	668806	Ceramic: 100 mmf	.20
C-13	8R51209	669105	Paper: .02 mf 100V	.20
C-14	8R472754	669082	Paper: .01 mf 100V	.20
C-15	8R23053	669096	Paper: .01 mf 200V	.20
C-16	8K71910	669081	Paper: .006 mf 400V (replaces .005 mf)	.20
C-17	23A500059	667609	Electrolytic: 20 mf 250V (together with C-20 & 21)	2.05
C-18	21R2744	666808	Mica: 330 mmf 500V (replaces 220 mmf)	.25
C-19	8R23690	668849	Paper: .01 mf 400V	.20
C-20	23A500059	667609	Electrolytic: 10 mf 250V (together with C-17 & 21)	2.05
C-21	23A500059	667609	Electrolytic: 10 mf 25V (together with C-17 & 20)	2.05
C-22	8A4093	668839	Paper: .01 mf 1600V	1.00
C-23	8K530877	669106	Paper: .04 mf 1000V	.35
C-24	8R4283	668938	Paper: .25 mf 100V	.35
C-25	1A591512	-	Spark Plate Assembly	.30
C-26	8R4283	668938	Paper: .25 mf 100V	.35
Resistors				
Note: All resistors are insulated, carbon type unless otherwise specified.				
R-1	6R6012	670536	33,000 20% 1/2W ...doz	1.20
R-2	6R6428	670452	6800 10% 1/2W ...doz	1.20
R-3	6R2039	670504	68 10% 1/2W ...doz	1.20
R-4	6R6004	670410	1 meg 20% 1/2W ...doz	1.20
R-5,9	18B501837	081002	Control, dual: volume (R-5), 500K, tapped at 150K, with on-off sw (S-1); tone (R-9), 1 meg	2.25
R-6	6R5591	670553	18,000 10% 1/2W ...doz	1.20
R-7	6R6015	670406	220,000 20% 1/2W ...doz	1.20
R-8	6R3987	670415	6.8 meg 20% 1/2W ...doz	1.20
R-9	-	-	See R-5	
R-10	6R476012	670449	3900 10% 2W	.25
R-11	6R6032	670408	470,000 20% 1/2W ...doz	1.20
R-12	6R6254	670512	330 10% 1W	.20
R-13	6R6389	670388	220 10% 1W	.20
R-14	6R6389	670388	220 10% 1W	.20
R-15	6R121254	672425	33 5% 2W	.25
Coils				
L-1	24K592197	079001	Choke, antenna spark	.15
L-2	24T532413	078005	Antenna coil	
L-3	24A591629	078006	Oscillator coil	.80
L-4	24A521816	079000	Choke, hash	.35
L-5	24K510576	079002	Choke, hash	.10
Transformers				
T-1	24T532414	770375	IF	
T-2	24T532414	770375	Diode	
T-3	25B502142	077046	Audio output	2.35
T-4	25T532415	077005	Power transformer	
Tubes				
V-1			12BE6	
V-2			12BA6	
V-3			12AV6	
V-4			6AS5	
V-5			6X4	
Miscellaneous				
F	65A10266	700491	Fuse: 10 amp ...doz	.60
LP-1	65A84419	704583	Bulb: 12-16 volts; Mazda 1815	.25
LS	50K501823	850103	Speaker, PM: 3.2 ohm VC; 4 x 6 exch	5.60* 4.20
S-1	-	-	Switch, ON-OFF (Part of R-5 & 9)	

Ref. No.	Motorola Part Number	PYE Part Number	Description	List Price
Vibrator				
V-6	48B522000	701104	Vibrator, non-sync: 4-pin; 12V....	4.70
CHASSIS PARTS - MECHANICAL				
	1V521892	073044	"A" Lead Assembly.....	.20
	42A591508	700882	Clamp, cable (for "A" lead)....doz	.15
	42A4215	-	Clip, vibrator grounding.....doz	1.20
	32B501848	071031	Gasket, speaker: rubber.....	.55
	4S7655	-	Lockwasher, int: 3/8" (volume control mtg).....doz	.15
	2S1376	-	Nut, hex: 3/8-32 x 1/2 (volume control mtg).....doz	.35
	9A530168	702022	Receptacle, antenna.....	.20
	9A502284	071036	Socket, pilot light.....	.20
	9K600976	704736	Socket, tube: 7-pin miniature.....	.15
	9A70208	700461	Socket, vibrator: 4-pin.....	.20
	31A591516	071034	Strip, fuse mtg.....	.20
MOUNTING PARTS & ACCESSORIES				
	36B502202	055003	Knob, tone control.....	.25
	36B502200	055006	Knob, tuning control.....	.20
	36K502201	055007	Knob, volume control.....	.25
	2A502084	030013	Nut, hex: 9/16-24 x 11/16 (receiver mtg to instrument panel).....doz	.60
	52A502203	055005	Pointer, dial.....	.10
	34C521877	073045	Scale, dial.....	.50
	4S400868	040078	Washer, flat: 3/4 x 19/32 x .042 thick (receiver mtg to instrument panel).....doz	.25

PRICES SUBJECT TO CHANGE WITHOUT NOTICE

*Plus Federal Excise Tax At Current Rate